

Gatonye, Margaret and Adekola,  
Olalekan ORCID: <https://orcid.org/0000-0001-9747-0583> (2020)  
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# PROMOTING CLIMATE-RESILIENT AQUACULTURE THROUGH SHARED SPACE FOR CO-DESIGNING ADAPTATION MEASURES

## PHASE 1

REPORT



# KEY POINTS:

- The Kenya fisheries and aquaculture sector plays a significant role in the growth of the economy. It contributes about 0.8% to the GDP, an equivalent of 461m USD, to the Kenyan economy and supports the livelihood of over 4 million people directly and indirectly. However, climate change is becoming a major challenge to the sector.
- The first phase of this project included review of extant literature conducted by a Kenyan researcher; field visits and interactions with stakeholders in four field locations/counties (Kajiado, Kiambu, Kakamega and Nairobi); a stakeholders workshop which took place in Nairobi, Kenya on 12th June, 2019; and a steering committee meeting which took place from 20th – 21st August, 2019 at the KMFRI Office in Nairobi, Kenya.
- The project has Intergrated participants representing various stakeholder groups including fish farmers, aquaculture associations, businesses, researchers, government, non-governmental organisations, and academia.
- The key direct climate related issues affecting aquaculture in Kenya include flooding, drought, water scarcity, and extreme temperature. Other indirect issues included poor enforcement and/or stringent aquaculture regulations, scarcity of feed, poor quality seed, effluent management, and inadequate extension service.
- Emerging technology and policies in aquaculture need to respond to the above risks and ensure that agriculture production is sustainable.
- There are opportunities to engage key stakeholders in the sector to facilitate and adopt policy and technological changes effectively.
- Key change needed included subsidizing of aquaculture inputs and machinery, regulatory structures on hatcheries standards, reinforcement of water usage act for equal access to resource, climate resilient training and adoption of technology. To achieve these effectively, there is need to build a robust evidence based research, align institutions with the policy change, consult stakeholder strategically and rebalance economic incentives.

## INTRODUCTION

This research project is conducted through a Royal Academy of Engineering Frontiers of Development funding scheme. The research seeks to contribute to an enhanced system of aquaculture management in Kenya. The duration of the programme is one year.

The objective of the project is to explore the potential to co-design approaches to minimize the impacts of climate hazards on aquaculture in Kenya. The

intention is to contribute to the evidence base for better aquaculture strategy, policy, and management in Kenya. Specifically, the research will contribute towards reducing and managing the various effects of climate change on aquaculture infrastructure and those depending on the sector as well as build capacities of stakeholders to guide co-production of suitable infrastructure within the context of Kenyan culture.

## OVERVIEW: PURPOSE AND SCOPE

This project has been participatory and collaborative allowing inputs from diverse stakeholders so as to achieve the goal of situating the outcomes in the Kenyan context and achieving the project aims. The project has adopted diverse methods including field visits to the four case study locations: Kakamega,

Kajiado, Nairobi and Kiambu, stakeholder workshop, steering/working group meetings, questionnaire, Interviews and review of literature. These yielded qualitative and quantitative data that are being analysed using appropriate methods.

## KEY FINDINGS

The following provides a summary of the key findings from the first phase of the project. The impacts of climate change on aquaculture in Kenya manifests itself in diverse form. For example, Water scarcity, rising temperature, prolonged drought and floods due to changes in rain patterns etc. are the major direct impacts. In addition high cost of inputs such as quality, affordable and available fish feed, seed and liners; access to finances for small holder farmers to upgrade their farms into more resilient once, effects of climate change which is accelerating hazards that reduce cultured fish. During the inception workshop, all respondents to opinion survey indicated that they have experienced an impact of climate related hazard on their farm in the last five years. The major issues relates to damage to infrastructure (such as ponds and pond liners), reduced production and yield and loss of income and livelihoods. The need for technology (i.e. green houses, raised tanks, airated ponds etc.), government policies, programmes and services and educational appraoches are top in stakeholders suggestion as ways to manage climate related hazrads in the aquaculture sector in Kenya. Therefore, the sector in Kenya more than ever before

needs innovative solutions in technological design and policies that will ensure a robust and resilient aquaculture sector.

In this regard, a steering group of eight people all drawn from different sectors met to design infrastructure that are resilient to climate change and identify climate resilient changes in policy. The results of this meeting will be integrate into the final report.

There is need to provide additional support to help farmers understand climate risks, train them to identify climate hazard warnings, understand how those warning are used and what should be done in case of incidences such as flood and/or drought. Furthermore, there is need to sensitize farmers and build their capacity to gain an understanding of how to manage the environment, especially when it comes to water management through responsible/sustainable abstraction as well as effluent management. There is also need for institutions that will regulate, manage and provide support for aquaculture farmers, especially when they are affected by climate hazards.





# NEXT STEPS

The next step of the project is to continue with the analysis of the data collected during the first phase of the project including outcome of the steering committee meeting, organise a second workshop (in October 2019), set up a climate resilient aquaculture

network and produce outputs which includes a policy brief. We hope our findings will provide inputs for the design of necessary aquaculture supportive legislation to strengthen institutions that mainstream climate resilience for the aquaculture sector in Kenya.

## ORGANISATIONAL TEAM

The study is being conducted by an international team of experts from the academia, private sector and research. The Principal Investigator for this study is Dr Olalekan Adekola from York St John University, United Kingdom. The Co-Investigators include: Ms

Margaret Gatonye from Aquacultural Association of Kenya (AAK); Mr Bart Malaba from Larive International; and Dr. Paul Orina from Kenya Marine and Fisheries Research Institute (KMFRI).

## CONTACT US:

**To sign up to Resilient Aquaculture in Kenya Newsletter' and find out more information about our research activities, please contact:**

**Ms Margaret Gatonye**

Aquacultural Association of Kenya

Tel: +254 726717949

Email: aakfishassociation@gmail.com

Facebook: Aquacultural Association of Kenya

**Dr Olalekan Adekola,**

York St John University, United Kingdom

E-Mail: o.adekola@yorks.ac.uk

Telephone: +44 (0)1904 876692

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